

Name: _____ Class: _____ Date: _____

GRADE 6 MATHEMATICS
MID-WINTER PACKET
EQUATIONS & EXPRESSIONS
RATIOS & PROPORTIONS

Directions:

- Read and answer the questions carefully
- Record your answers to this cover page
- Show All Your Work to receive full credit

QUESTIONS	ANSWERS
1	
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25	
Score	%

Grade 6 Mathematics Reference Sheet

CONVERSIONS

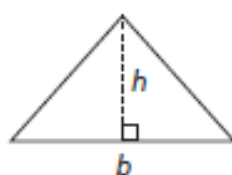
1 yard = 3 feet
1 mile = 5,280 feet

1 cup = 8 fluid ounces
1 pint = 2 cups
1 quart = 2 pints
1 gallon = 4 quarts
1 liter = 1,000 milliliters

1 pound = 16 ounces
1 ton = 2,000 pounds
1 kilogram = 1,000 grams

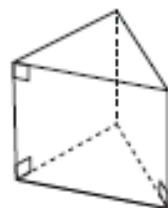
FORMULAS AND FIGURES

Triangle

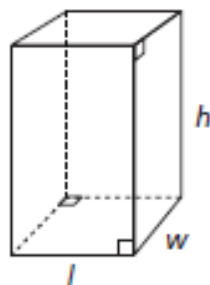


$$A = \frac{1}{2}bh$$

Right Triangular Prism

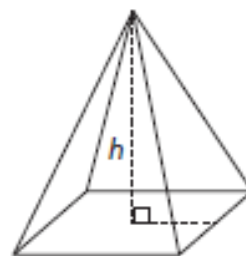


Right Rectangular Prism



$$V = lwh$$
$$V = Bh$$

Right Rectangular Pyramid



TIPS FOR TAKING THE TEST

Here are some suggestions to help you do your best:

- Read each question carefully and think about the answer before choosing your response.
- You have been provided with mathematics tools (a ruler and a protractor) and a reference sheet to use during the test. It is up to you to decide when each tool and the reference sheet will be helpful. You should use mathematics tools and the reference sheet whenever you think they will help you to answer the question.

1

In which set do all of the values make the inequality $2x - 1 < 10$ true?

A {10, 15, 20}

B {5, 7, 9}

C {4, 6, 8}

D {2, 3, 4}

2

What is the value of the expression below?

$$2[3(4^2 + 1)] - 2^3$$

A 156

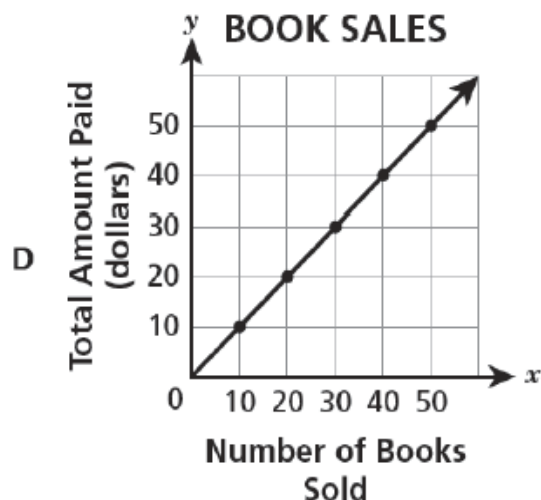
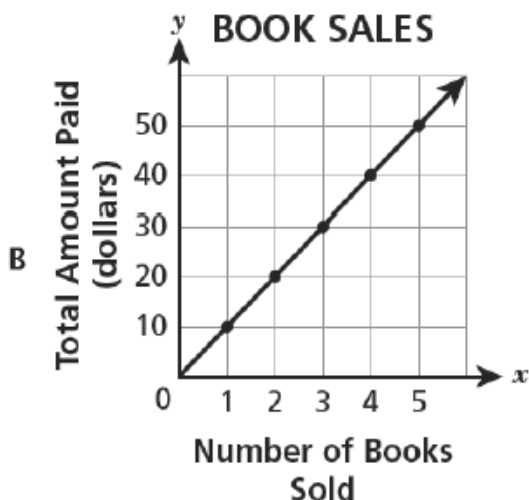
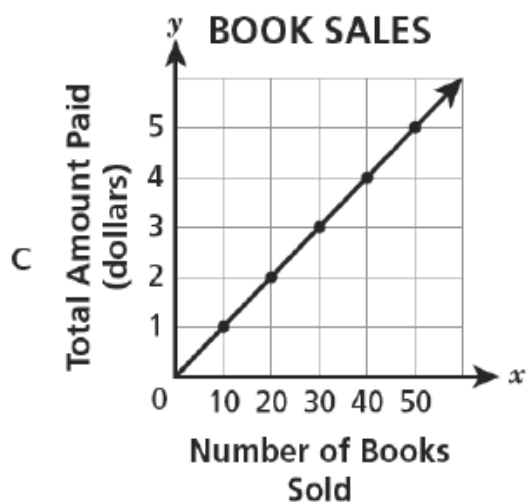
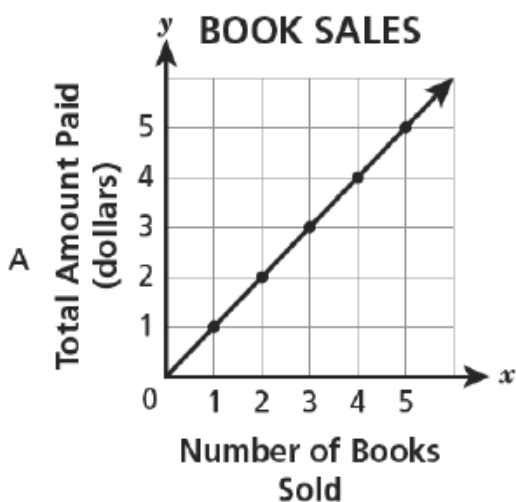
B 110

C 94

D 48

3

A bookstore is selling books for \$10 each. Which graph shows the relationship between the number of books, x , the store sold and the total amount of money, y , paid from the book sales?



4

Which phrase is a description of $2m + 7$?

- A 7 more than 2 times m
- B 2 more than 7 times m
- C 2 times the sum of 7 and m
- D 7 times the sum of 2 and m

5

George has \$23 to spend on art supplies. He wants to buy markers, paper, and glue. If the total cost of the markers and paper is more than \$14, which inequality represents the dollar amount, p , George can spend on glue?

- A $p < 9$
- B $p > 9$
- C $p < 37$
- D $p > 37$

6

A student formed a pattern in which each term is represented by a sum. The first four terms of the pattern are shown below.

n	Sum
1	1
2	$1 + 3$
3	$1 + 3 + 5$
4	$1 + 3 + 5 + 7$

Which expression can be used to determine the value of the sum in any term, n ?

- A n^2
- B $4n$
- C $n + 3$
- D 2^n

7

Which expression is equivalent to $5(6x + 3y)$?

- A $11x + 3y$
- B $11x + 8y$
- C $30x + 3y$
- D $30x + 15y$

8 Which pair of expressions is equivalent for any variable value greater than zero?

- A $3(x + 2)$ and $3x + 2$
- B $4d + 2e$ and $8d + e$
- C $f + f + f + g$ and $3fg$
- D $b + b + 3c$ and $2b + 3c$

9 The surface area, S , of a right rectangular prism with length l , width w , and height h can be found using the formula below.

$$S = 2(lw + wh + hl)$$

What is the surface area, in square inches, of a prism with a length of 12 inches, a width of 9 inches, and a height of 2 inches?

- A 300
- B 258
- C 150
- D 92

10 In 2010, Kim-Ly earned \$17.50 for 2 hours of work. Which table shows the relationship between the number of hours worked and Kim-Ly's total earnings, if her rate per hour is constant?

A

Number of Hours	Total Earnings
1	\$17.50
2	\$35.00
3	\$52.50
4	\$70.00

C

Number of Hours	Total Earnings
1	\$16.50
2	\$17.50
3	\$18.50
4	\$19.50

B

Number of Hours	Total Earnings
1	\$17.50
2	\$17.50
3	\$17.50
4	\$17.50

D

Number of Hours	Total Earnings
1	\$8.75
2	\$17.50
3	\$26.25
4	\$35.00

11

Rosa has a goal of running a total of 100 miles this month. Each day that she ran, she ran 5 miles. Which expression could Rosa use to determine how many miles she has left to run after running for d days?

A $100 - 5d$

B $5d + 100$

C $\frac{100}{5d}$

D $5d$

12

Which value or values for the variable c from the set below will make $5.6 + 0.4c \leq 6c$ true?

$$\{0, 0.875, 1, 2.5\}$$

A only 2.5

B 1 and 2.5

C 0.875, 1, and 2.5

D all values in the set

13

The two expressions below are equivalent.

$$y(2.5 + 7) + y - 2$$

$$10.5y - 2$$

Which statement best explains why the expressions are equivalent?

A The expressions have the same value for any value of y .

B The expressions have the same value for only whole number values of y .

C The expressions have the same value only when y is an odd number.

D The expressions have the same value only when y is an even number.

- 14 Which quantity could go in the blank to make the equation below true?

$$x + 2x + \underline{\hspace{1cm}} = 5x$$

- A 2
- B 3
- C $2x$
- D $3x$

- 15 A sandwich shop sells sandwiches for \$5.95 each, including tax. The shop received a total of \$71.40 from the sales of sandwiches one afternoon. Which equation can be used to determine the number of sandwiches, x , sold by the sandwich shop that afternoon?

- A $5.95 + x = 71.40$
- B $5.95 \div 71.40 = x$
- C $5.95x = 71.40$
- D $5.95 \div x = 71.40$

- 16 Which pair of expressions below are equivalent?

- A $7(2x)$ and $9x$
- B $3x + 5x$ and $15x$
- C $4(2x - 6)$ and $8x - 24$
- D $x + x + x + x$ and x^4

- 17** A shelf has four books on it. The weight, in pounds, of each of the four books on the shelf is listed below.

2.5, 3.2, 2.7, 2.3

Which inequality represents the weight, w , of any book chosen from the shelf?

- A $w > 2.3$
- B $w < 2.4$
- C $w > 3.2$
- D $w < 3.3$

- 18** The weight of an object on the moon, m , is about $\frac{1}{6}$ of the object's weight on Earth, e . Which equation represents the approximate weight of an object on the moon in terms of the object's weight on Earth?

- A $m = \frac{1}{6} + e$
- B $m = \frac{e}{6}$
- C $m = 6 + e$
- D $m = 6e$

- 19** Fei Yen's dog eats 8 ounces of dog food each day. Fei Yen bought a 28-pound bag of dog food. How many 8-ounce servings are in a 28-pound bag of dog food?

- A 14
- B 56
- C 224
- D 448

20

Point A and point B are placed on a number line. Point A is located at -20 and point B is 5 less than point A. Which statement about point B is true?

- A It is located at -25 and is to the right of point A on the number line.
- B It is located at -15 and is to the right of point A on the number line.
- C It is located at -25 and is to the left of point A on the number line.
- D It is located at -15 and is to the left of point A on the number line.

21

Carletta bought 14 yards of green string to make shoelaces in the school color for her basketball team. She estimates that it takes $\frac{2}{5}$ yard to make one shoelace. How many shoelaces can she make?

- a. $5\frac{3}{5}$ b. 28 c. 35 d. 42

22

Zelma buys p pounds of bananas for 40 cents per pound. She pays the clerk with a twenty-dollar bill. The clerk subtracts the total cost of the bananas from the twenty-dollar bill to determine the amount of change to give Zelma.

Which expression represents the amount of change Zelma should receive?

- A $p - 20$
- B $20 - 40p$
- C $20 - 0.40p$
- D $0.40p - 20$

- 23** The table below lists four masses and their corresponding approximate weights on Earth.

**MASSES AND
CORRESPONDING WEIGHTS**

Mass (kilograms)	Weight (Newtons)
20	196
50	490
x	1078
130	1274
140	1372

The ratio of weight to mass is constant. Which statement describes the ratio of weight to mass and the value of x in the table?

- A The ratio is $\frac{98}{10}$; $x = 90$
- B The ratio is $\frac{98}{10}$; $x = 110$
- C The ratio is $\frac{10}{98}$; $x = 90$
- D The ratio is $\frac{10}{98}$; $x = 110$

- 24** What value of y makes the equation below true?

$$y + 2.9 = 11$$

- A 8.1
- B 8.9
- C 9.1
- D 13.9

A scientist studied the migration patterns of two types of whales.

- The humpback whales traveled 2,240 miles in 28 days.
- The gray whales traveled 2,368 miles in 32 days.

If the humpback whales had traveled at the same rate for 32 days, how many more miles would they have traveled than the gray whales?

- A 128
- B 192
- C 280
- D 408